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IN THE

Supreme Court of the United States

J.E.M. AG SUPPLY, INC.
(doing business as Farm Advantage, Inc.),
FARM ADVANTAGE, INC., LARRY BENZ,
MERLE PRUETT (doing business as Siouxland Seeds, Inc.),
KEVIN WOLFSWUNKEL, TIM KAMSTRA, and
TOM EISCHEN SEED & CHEMICALS,
Petitioners,

v.

PIONEER HI-BRED INTERNATIONAL, INC.,
Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF *AMICI CURIAE* OF AMERICAN CORN GROWERS ASSOCIATION & NATIONAL FARMERS UNION IN SUPPORT OF THE PETITIONERS

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QUESTION PRESENTED

Are utility patents issued under 35 U.S.C. § 101 granting the right to exclude others from sexually reproducing plants or plant varieties, or from selling or using plants or plant varieties reproduced by means of sexual reproduction (by seed), invalid because the Plant Variety Protection Act of 1970, 7 U.S.C. § 2321, *et seq.*, and the Plant Patent Act of 1930, 35 U.S.C. §§ 161-164, are the exclusive means of obtaining a federal statutory right to exclude others from reproducing, selling, or using plants and plant varieties?

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STATEMENT OF INTEREST OF *AMICI CURIAE* [1]

Amicus American Corn Growers Association ("ACGA") is a non-profit, national commodity association representing the interests of thousands of corn producers in twenty-eight (28) states. ACGA works to develop national legislation that protects the interests of corn producers and the rural communities that depend on them. Through the development of educational and promotional programs, the ACGA represents the needs of corn growers nationwide. The extension of utility patent protection to sexually reproducing plants has directly affected ACGA members. The patenting of seeds has taken away their Congressionally supported right to save seed. Additionally, it has raised the cost of farm inputs through a steady consolidation of the seed industry and its accompanying increase in seed prices. Finally, many ACGA members have financially supported public plant breeding research through mandatory national and state commodity check off (excise taxes), the benefits of which are increasingly stifled by the extension of utility patent rights to sexually reproducing plants.

Amicus the National Farmers Union ("NFU"), officially called the Farmers Educational and Cooperative Union of America, was founded in 1902. NFU is a general farm organization with a membership of nearly 300,000 farm and ranch families throughout the United States. NFU is a federation, with the presidents of the 23 state and 1 regional (covering three states) Farmers Union organizations serving as its board of directors.

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[1] Letters from all parties consenting to the filing of this brief have been filed with the Clerk. No counsel for a party authored this brief, in whole or in part, and no person or entity other than *amici curiae*, or their counsel, made a monetary contribution to the preparation or submission of this brief.

For nearly 100 years, NFU's primary goal has been to sustain and strengthen family farm and ranch agriculture. NFU believes that a vibrant agricultural sector is the foundation for strong farm and ranch families and thriving rural communities. These vibrant rural communities, in turn, are vital to the health and economic well-being of the entire U.S. economy. Family farm agricultural production is an important part of America's heritage.

The extension of utility patent protection to sexually reproducing plants has directly affected NFU's members. The patenting of seeds has taken away their Congressionally supported right to save seed. Additionally, it has raised the cost of farm inputs through a steady consolidation of the seed industry and its accompanying increase in seed prices.

SUMMARY OF ARGUMENT

For over seventy years, Congress has repeatedly rejected the notion that sexually reproducing plants are patentable subject matter under section 101 of the Patent Act. *See* 35 U.S.C. § 101. Moreover, Congress has conducted several extensive reviews of the unique characteristics of sexually reproducing plants and specifically rejected extending utility patent protection to them. Cognizant of the significant negative impacts upon the farming and plant breeding communities that would be caused by extending patent protection to sexually reproducing plant varieties, Congress in 1970 crafted a compromise, the Plant Variety Protection Act ("PVPA"), 7 U.S.C. § 2321, *et seq*. The PVPA granted plant breeders a unique type of intellectual property protection, one that still allowed, *inter alia*, for research on and the saving of protected seed. Thus, Congress explicitly created a plant protection regime that had several provisions distinctly different from the broader protection granted in utility patent protection.

In 1985, the United States Patent and Trademark Office ("PTO") unilaterally overturned the PVPA, and stood

Congressional intent on its head, by arbitrarily and capriciously granting utility patents on sexually reproducing plant varieties. 1060 O.G. 4 (Oct. 8, 1985).[2] The Pioneer Hi-Bred patents at issue in this case are an extension of PTO's *ultra vires* agency action and should not be upheld. As Congress had long feared, the PTO's granting of utility patent protection has had profoundly destructive impacts on farming and plant breeding communities. PTO's illegal patenting policy has stifled, and is curtailing, important research in creating new improved plant varieties. It is also seriously eroding the diverse U.S. agricultural germplasm base upon which the nation's, and much of the world's, food security depends. Additionally, the PTO policy has resulted in the exponential consolidation of the seed industry which has led, in turn, to a handful of corporations fundamentally dictating deleterious alterations in the nation's farming practices through patent-based "technology-user" fees and agreements. As described herein, the impacts of the misguided PTO patenting policy are significant and continue to profoundly harm the interest of Amici. As tragic as they are, these impacts should not surprise. They reflect the precise reasons why Congress has wisely rejected extending utility patent protection to sexually reproducing plants.

ARGUMENT

I. CONGRESS AND THE LEGISLATIVE HISTORY OF PLANT PATENTING

A. Plant Patent Act of 1930

Before 1930, there were no intellectual property rights attached to the development of unique plant varieties

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[2] After the decision by the Board of Patent Appeals in *Ex Parte Hibberd*, 227 U.S.P.Q. 443 (PTO Bd. Pat. App. & Int. 1985), the PTO published notice stating "[t]he Patent and Trademark Office is now examining applications including claims to plant life - e.g. plants per se, seeds, plant parts."

regardless of whether they were asexually or sexually reproduced.[3] In 1930, Congress passed the Townsend-Purnell Plant Patent Act ("PPA"), 35 U.S.C. §§ 161-164. The purpose of the PPA was:

> To remove the existing discrimination between plant developers and industrial inventors. To these ends the bill provides that any person who invents or discovers a new and distinct variety of plant shall be given by patent an exclusive right to propagate that plant by asexual reproduction; that is, by grafting, budding, cutting, layering, division, and the like, *but not by seeds*." Sen. Rep. No. 71-315, at 1 (1930) (emphasis added).

During the passage of the 1930 PPA, Congress directly rejected the notion that sexually reproducing plants should be subject to patent protection. As one commenter noted "in 1929 when the matter of *including seeds* in a proposed Plant Patent amendment was presented to officials of the Patent Office, of Congressional Committees, and the U.S. Dept. of Agriculture, it was clearly evident that *no Plant Patent bill could be passed* that *included seed propagated plants*." General Revisions of the Patent Laws: Hearings on S. Res. 37 on S.2, S.1042, S.1377, S. 1691, S.2164, S.2597, Before the Senate Subcomm. on Patents, Trademarks and Copyrights of the Comm. on the Judiciary, 90th Cong. 803 (1968) (Testimony of Paul C. Stark) (emphasis in original).

Throughout passage of the PPA, both houses of Congress explicitly rejected making sexually reproducing plants patentable subject matter under section 101 of the Patent

[3] Attempts in the early 1900's to allow the registration of new plant varieties as trademarks failed. *See* Cary Fowler, *Unnatural Selection* 80-81 (Gordon and Breach eds.) (1994).

Act.[4] A Senate Report noted that: "Whether the new variety is a sport, mutant or hybrid, the patent right granted is a right to propagate a new variety by asexual reproduction. ***It does not include the right to propagate by seeds***. This limitation in the right granted recognizes a practical solution and greatly narrows the scope of the bill." S. Rep. 71-315, at 4 (1930) (emphasis added). The House concurred, stating: "To these ends the bill provides that any person who invents or discovers a new and distinct variety of plant shall be given by patent an exclusive right to propagate that plant by asexual reproduction; that, is by grafting, budding, cuttings, layering, division, and the like, *but not by seeds*." H.R. Rep. 71-1129, at 1 (1930) (emphasis added).

B. Patent Act Amendments of 1952

Subsequent to 1930, Congress explicitly moved the asexual reproducing plant patent provisions out of the subject matter covered under section 101. During this comprehensive revision of the Patent Act, Congress moved the plant patent provision of the 1930 PPA into Chapter 15 titled "Patents for Plants." Contrary to the Respondent's suggestion, the 1952 amendments merely indicate that Congress was seeking to further clarify its 1930 legislation by creating a chapter unique to plants. The amendments in no way state or imply that Congress was considering extending utility patent protection to sexually reproducing plant varieties and seeds. Rather, the changes creating a separate chapter governing the patenting of asexually reproducing plants actually exhibit Congressional intent to create standards different from that of section 101 when the patentable subject matter was plant material.

[4] Prior to the 1952 Patent Act Amendments, the statutory equivalent of section 101 was found at § 4886 of the Revised Statutes. *See* S. Rep. No. 71-315, at 10 (1930).

C. Development of the PVPA and Rejection of Utility Patents, 1965-1970.

After thirty-five years of providing patent protection solely to asexually reproducing plants, both Congress and the Executive Branch began to revisit patent reform, including the issue of patents as they applied to sexually reproducing plants. On April 8, 1965, through Executive Order 11125, the President's Commission on the Patent System was created. A little less than two years after its creation, the Commission issued its report on patent reform. President's Comm'n on the Patent System, To Promote the Progress of . . . Useful Arts In An Age of Exploding Technology, S. Doc. No. 90-5 (1967). The Commission focused directly on the question of patenting sexually reproducing plants and stated:

> While the Commission acknowledges the valuable contribution of plant and seed breeders, *it does not consider the patent system the proper vehicle for the protection of such subject matter, regardless of whether the plants reproduce sexually or asexually.* It urges further study to determine the most appropriate means of protection. *Id.* at 13 (emphasis added).

The Commission's report was followed by President Johnson's legislative recommendations, embodied in the Patent Reform Act of 1967. U.S. Dept. of Commerce, Communication from the President of the United States, A Draft of Proposed Legislation for the General Revision of the Patent Laws, Title 35 of the United States Code and for Other Purposes, H.R. Doc. No. 90-59 (1967). The presidential legislative proposal maintained the use of patent protection for asexually reproducing plants, but did not seek to expand patent protection to sexually reproducing plants.

During the legislative debate that ensued, the PTO was expressly aware that Congress had never delegated authority to the PTO to issue patents for sexually reproducing plants.

In fact, the PTO was concerned about the Presidential Commission's recommendation concerning plant patents and even issued a Federal Register notice seeking comments about the possible elimination of the 1930 statutory provisions allowing the patenting of asexually reproduced plants. 33 Fed. Reg. 29 (January 3, 1968).

Significantly, during the 1968 debate on patent reform legislation an amendment to allow sexually reproducing plants to be patented was introduced in the Senate. The amendment proposed to insert the word "or sexually" in sections 161 and 163 of the PPA, the net effect of which would be to permit the patenting of sexually reproduced, as well as asexually reproduced varieties. *See* Plant Variety Protection: Hearings on H.R. 13424, H.R. 13631, H.R. 13901, H.R. 14332, and H.R. 15226, Before the House Subcomm. on Departmental Operations of the Comm. on Agriculture, 91st Cong. 10 (1970). The amendment was defeated. *Id.* In recognizing this legislative defeat, the American Seed Trade Association ("ASTA") stated to Congress, "Attempts to reach agreement on the proposed amendment to the Plant Patent Act failed, and faults in that approach were recognized, so the American Seed Trade Association next undertook to develop a statute more carefully suited for plant variety protection." *Id.* Similarly, the PTO was clearly cognizant of the amendment's defeat and worked with ASTA in the crafting of the PVPA as an alternative form of intellectual property protection for sexually reproducing plants. *Id.* at 55 (Statement of Hon. Burt L. Talcott describing the inability of seeds to be protected under the Patent Act and the crafting of the PVPA alternative by ASTA, PTO, members of Congress and USDA).

Congressional defeat of this amendment and its affirmation of the long standing policy of not extending patent protection under section 101 (or other parts of the Patent Act) for sexually reproducing plants were based on several important

policy decisions. Most notably, Congress deferred to the deep concerns of the United States Department of Agriculture ("USDA"). USDA opposed granting utility patents to sexually reproducing plants because such patents would threaten continuing development and introduction of new varieties of seed. More specifically, the agency feared that seed patenting would severely limit free exchange of data, restrict open discussion of research and diminish the exchange of experimental plants. Additionally, USDA argued that extending utility patents to sexually reproducing plants was scientifically and legally unsound in that such plants could not be reproduced true to type or be reasonably capable of identification, as was the case with asexually reproduced plants. *See* General Revisions of the Patent Laws: Hearings on S. Res. 37 on S.2, S.1042, S. 1377, S. 1691, S. 2164, S. 2597, Before the Senate Subcomm. on Patents, Trademarks and Copyrights of the Comm. on the Judiciary, 90th Cong. 715 (1968).

Though Congress, now for the second time, had specifically rejected the patenting of sexually reproducing plants, it did understand that some protection for these plants was appropriate. Congress sought an alternative form of protection. Such a compromise emerged in the Plant Variety Protection Act. As one of the original supporters of the PVPA, Rep. Clarence J. Brown, stated:

> Today our patent and copyright laws extend themselves to cover inventions, the works of artists and writers, and the innovations resulting from scientific research. It seems only fair and reasonable to extend similar protection to those whose investment, effort, knowledge and skill result in the development of new and stronger plant varieties. *Existing law does not now provide such protection to private plant breeders and the developers of sexually reproduced plant varieties. This legislation seeks to correct the oversight of that situation.* Plant

> Variety Protection: Hearings on H.R. 13424, H.R. 13631, H.R. 13901, H.R. 14332, and H.R. 15226, Before the House Subcomm. on Departmental Operations of the Comm. on Agriculture, 91st Cong. 53 (1970) (emphasis added).

Enacted in 1970 (and amended in 1994), the PVPA provides developers of new varieties of plants with patent-like rights that protect the reproduction of their varieties. Under the PVPA, a Certificate of Protection is awarded by the USDA's Plant Variety Protection Office to an owner of a variety after an examination shows that it is new, distinct from other varieties, and genetically uniform and stable through successive generations. The term of protection is twenty (20) years for most crops and twenty-five (25) years for trees, shrubs, and vines. The owner of a U.S. protected variety has exclusive rights to multiply and market the seed of that variety.[5]

In light of this new protection, and USDA's concerns over the extension of utility patent rights to sexually reproducing plants, Congress accurately recognized that they must provide exceptions to the new patent-like rights in an effort to be consistent with public policy. Accordingly, there are two exemptions to the rights granted under the PVPA. One exemption allows research to be conducted using PVPA protected varieties. This allows for the free exchange or germplasm within the research community. Specifically, the PVPA's Research Exemption states, "The use and reproduction of a protected variety for plant breeding or other

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[5] Section 2483 of the PVPA states, "Every certificate of plant variety protection shall certify that the breeder, has the right, during the term of the plant variety protection, to exclude others from selling the variety, or offering it for sale, or reproducing it, or importing it, or exporting it, or using it in producing a hybrid or different variety therefrom, to the extent provided by this Act." 7 U.S.C. § 2483.

bona fide research shall not constitute an infringement of the protection provided under this act." 7 U.S.C. § 2544.

A second exemption was created to allow farmers to save seed for re-planting. The PVPA creates a right to save seed stating that ". . . it shall not be infringement of any right hereunder for a person to save seed produced by . . . authority of the owner of the variety for seeding purposes and use such saved seed in the production of a crop for use on his farm, or for sale as provided in this section." 7 U.S.C. § 2543.

In the context of this case, the results of this legislative compromise are obvious. Congress refused to extend to the breeders of sexually reproduced plants the patent protection afforded breeders of asexually reproducing plants. Instead, Congress specifically crafted a new and distinct intellectual property regime for sexually reproducing plants. This action should be dispositive as to Congressional intent on the patenting of sexually reproducing plants. The continuing Congressional rejection of utility patents of such plants clearly demonstrates that the PTO's granting of utility patent protection on sexually reproducing plants is a paradigm example of agency ultra vires behavior. As this Court has noted, Congressional rejection of a statutory provision "strongly militates against a judgment that Congress intended a result that it expressly declined to enact." *Gulf Oil Corp. v. Copp Paving Co.*, 419 U.S. 186, 200 (1974).

In an attempt to deflect the force of Congress' clear rejection of utility patenting for sexually reproducing plants, the lower court in this case suggested that the 1952 legislative history of the Patent Act, in particular language that purports to suggest that everything "made under the sun" was patentable, somehow provided evidence that Congress had changed its collective mind and suddenly allowed sexually reproducing plants to be patented under section 101. The lower court relies on the decision in *Diamond v. Chakrabarty*, 447 U.S. 303 (1980), to support its position. The lower court's

reasoning is misguided. In *Chakrabarty*, the Court did allow the patenting of a genetically engineered microbe. However, the Court's ruling was made in the context of the Court finding that Congress had never focused directly on whether a genetically engineered bacteria was patentable subject matter under section 101. Of even more relevance to the current matter, the Court found that had Congress wanted it could have acted to exclude a genetically engineered bacteria from patenting had it enacted a separate statute to address the matter. *Chakrabarty* at 318. Thus, the breadth of section 101 that allowed the bacteria to be patented in *Chakrabarty* is derived from a failure of Congress to specifically reject an extension of such power over the bacteria.

As described *supra*, Congressional history concerning the use of section 101 on sexually reproducing plants tells a different story. Congress has explicitly rejected using section 101 to make sexually reproducing plants patentable, and it did so in 1970 long after the 1952 Patent Amendments had passed. To now claim that the 1952 Amendments somehow supersede the passage of the PVPA in 1970 defies reason. In seeking to accommodate this incoherent view of the 1952 Amendments, respondents ask this Court to erase all Congressional action subsequent to 1952. Respondent's position would render irrelevant (1) the Presidential Commission's examination of the issue between 1965-1968; (2) the Congressional rejection of amendments to the Plant Patent Act that would have extended patent rights to seeds in 1968; (3) the Congressional arguments from the plant breeding community about the need for some sort of intellectual property protection for sexually reproducing plants; and (4) the legislative compromise crafted into the PVPA. Any reasonable reading of Congressional intent cannot erase almost two decades of intense Congressional scrutiny of this very issue. Most clearly, Congress did not in any way allow the patenting of sexually reproducing plants in 1952 and specifically rejected extending section 101's reach

to include sexually reproducing plants both before 1952 and long after. As the Court itself has stated, "[f]ew principles of statutory construction are more compelling than the proposition that Congress did not intend sub silentio to enact statutory language that it has earlier discarded." *INS v. Cardozo-Fonseca*, 480 U.S. 412, 442-43 (1987). Congress has discarded using section 101 to grant patent protection for sexually reproducing plants and the Court should not sanction a federal agency's action ignoring such action.

II. THE PTO'S EXTENSION OF UTILITY PATENTS TO SEXUALLY REPRODUCING PLANTS IS ARBITRARY AND CAPRICIOUS

On October 8, 1985, in notice by Donald Quigg, the PTO announced it was putting the *Ex Parte Hibberd* decision, 227 U.S.P.Q. 443 (PTO Bd. Pat. App. & Int. 1985), into practice and began accepting patent applications for sexually reproducing plants. 1060 O.G. 4 (Oct. 8, 1985). The lower courts and Respondent suggest that the PTO's decision concerning *Hibberd* in some manner justified the extension of section 101 subject matter to include plants. However, the PTO's decision was never sanctioned by Congress and represents the agency's interpretation of section 101, and is directly contrary to its Congressional mandate. Therefore, the PTO's action is ultra vires, completely beyond the bounds of authority delegated to it by Congress. The PTO is a federal agency subject to constraints on its activity under the Administrative Procedure Act (APA). *Dickinson v. Zurko*, 527 U.S. 150, 154 (1999). A federal agency's administrative powers are limited to the authority delegated by Congress. *Bowen v. Georgetown Univ. Hosp.* 488 U.S. 204, 208 (1988). Accordingly, the PTO's 1985 interpretation concerning sexually reproducing plants goes beyond the Congressional authority delegated to the PTO. Congress has never delegated PTO the power to grant utility patents for sexually reproducing plants under section 101. In fact, Congress

specifically rejected such a delegation twice—once in 1930 and a second time in 1968. Given Congress' action, the PTO's interpretation cannot be seen as either consistent with the plain meaning of the Patent Act nor a reasonable interpretation of the statute. *See Chevron U.S.A., Inc. v. Natural Resources Defense Council*, 467 U.S. 837 (1984). The PTO's actions ignore the clearly ascertainable legislative intent of Congress and should not be deemed lawful.

It follows, that Pioneer's utility patents are the tainted fruit of the poisoned tree. The PTO's issuance of these patents are direct product of PTO's arbitrary and capricious interpretation of the Patent Act and the scope of section 101. As such, the patent protection granted to Pioneer should not be upheld.

III. IMPACTS ON PLANT BREEDING CAUSED BY PTO'S ILLEGAL EXTENSION OF UTILITY PATENT PROTECTION.

The general result of extending utility patents to sexually reproducing plants is to give the rights' holders greater control over access and use of the protected plants and plant components. Plant utility patents allow the inventor-breeder to claim not just the plant as a whole, as is the case with asexually reproduced Plant Patents and PVPA certificates, but the inventor-breeder can claim the individual components of the variety. In addition to the components of a variety, such as a DNA sequence, gene, tissue culture, seed or specific plant part, the inventor-breeder can claim methods using the variety to make other varieties or hybrids. The inventor-breeder can also claim any hybrid varieties created in the future that result from use of its patented varieties. In rejecting the patenting of sexually reproducing plants, Congress had good reason to fear that extension of such exclusive rights would have profound effects on plant breeders and farmers.

A. Utility Patents Exacerbate Genetic Erosion And Promote Plant Uniformity

The severe limitations placed upon plant breeders by utility patent protection have enormous ramifications for the whole of agriculture. To the extent possible, plant breeders have attempted to maintain access to a wide range of genetic variability to develop healthier strains and meet changing conditions. Diversity has therefore served as a traditional tool for plant breeders to ensure the stability of American agriculture. For many years, plant breeders, scientists and others concerned about maintaining a genetically diverse agriculture have been worried about genetic erosion—the loss of genetic diversity through extinction—in the major food crops of the world. For example, current United States National Seed Storage Laboratory holdings suggest that since 1903 the U.S. has lost 94.1% of beet varieties, 96.1% of sweet corn varieties, 92.8% of lettuce varieties and 80.6% of tomato varieties.[6]

Modern agriculture is dependent upon a relatively small number of commercial crop species, some of which are dominated by a relatively small number of varieties within the species. The lack of genetic variability or diversity within these crops means that they can be highly susceptible to plant pathogens which could wipe out a significant proportion of a crop in a very short time. Without a free flow of research information and germplasm, plant breeding research on developing genetically diverse and unique commercial varieties will be delayed and often permanently impeded.

This point was of particular interest to the agricultural community at the time the PVPA was passed. In 1970, a fungus attacked the genetically similar U.S. Corn crop cutting yields by fifteen percent and costing farmers hundreds of

[6] *See* Cary Fowler, *Unnatural Selection* 239-240 (Gordon and Breach eds.) (1994) (citing to Table 12).

million of dollars. The Corn Blight of 1970 is a reminder that the policies passed by Congress to ensure broad access to germplasm through the plant breeders' exemption and seed savers' exemption serves as an insurance policy to avoid similar events in the future.[7] Indeed, in discussing the extension of patent protection to sexually reproducing plants, USDA opposed the extension of patent rights in part because it would diminish the access to and number of plants available to plant breeders for research.

Human agriculture involves the screening and manipulation of plants' genetic components. The larger the pool of genetic resources, the greater the options a plant breeder has to meet changing conditions. The PTO's unilateral move to extend patent rights to sexually reproducing plants has increasingly tied up germplasm in a miasma of legal arrangements and has begun to erode the genetic diversity of our foods. In the end, as new varieties are subject to patent protection, plant breeders have lost valuable genetic characteristics and raw materials with which to work.

Prior to the utility patenting of seeds, public plant breeding created a range of agricultural cultivars appropriate to a wide range of agroecological zones. However, as patent protection becomes pivotal to all plant breeding it tends to focus new plant breeding solely in commodity areas in which the most profit can be made. This narrow research focus serves to further erode the United States' genetic diversity.

[7] In supporting the passage of the PVPA, one commenter noted, "American agriculture needs an unending succession of new crop varieties because the hazards to crop production are constantly changing . . . . Therefore, the need for new varieties is never satisfied." Plant Variety Protection: Hearings on H.R. 13424, H.R. 13631, H.R. 13901, H.R. 14332, and H.R. 15226, Before the House Subcomm. on Departmental Operations of the Comm. on Agriculture, 91st Cong. 36 (1970) (Testimony of Dr. Walter O. Scott, Illinois Crop Improvement Association).

Additionally, the legal requirements of utility patents demand commercially-oriented uniformity which is undesireable for the future of American agriculture, since it may well increase susceptibility of plants to pests and diseases, as in the case with the 1970 Corn Blight. In fact, Congress specifically rejected extending utility patents to sexually reproducing plants because of the difficulty in providing written descriptions of uniform breeding results.

Finally, the rapid trend toward seeking utility patent protection in plants will increasingly result in researchers ignoring the remaining germplasm diversity. Patenting plant varieties hampers innovation as breeders are increasingly unable to use a patented variety for any commercial or research purpose without authorization and a licensing agreement from the patent holder. As the right of plant breeders and companies to exclude others from use of their research expands, all genetic resources are increasingly underutilized. This phenomenon has been dubbed the "Tragedy of the Anticommons." *See* Michael A. Heller, *The Tragedy of the Anticommons: Property in the Transition from Marx to Markets*, 111 Harvard L. Rev. 621 (1998); *See also* Heller and Eisenberg, *Can Patents Deter Innovation? The Anticommons in Biomedical Research*, 280 Science 698 (1998). In application to the issue at hand, a genetic resource will be prone to under use (i.e a lack of a robust plant breeding sector) in a tragedy of the anticommons when multiple owners, such as Pioneer, each have a right to exclude others from the use of the scarce genetic resource and no one has an effective privilege of use. While the utility patent right can be licensed to researchers, often owners of these patent rights will refuse to grant licenses for strategic reasons such as preventing a competitor from "inventing around" the patent holder's market position. The problem becomes compounded in areas of rapid and complex research, such as plant breeding, where research may need to navigate among many licenses on numerous utility patents and any one patent

owner could hold up research by denying the license. In the case of plant resources, as patent protection increases around a rapidly disappearing germplasm base, the ability of plant breeders to utilize this resource for improving plant varieties becomes increasingly limited. Patents may slow down invention or alternatively, as borne out in the expanding litigation between numerous companies over patent infringement, create enormously complex cross-licensing agreements whereby a plant variety might be covered by a dozen different patents.

In 1970, Congress wisely came to a compromise in order to avoid the dire results of extending utility patent protection to sexually reproducing plants. This compromise created a research exemption from the new intellectual property protection granted in the PVPA. It specifically sought to allow plant breeding to take place relatively unencumbered and to prevent exclusions from use of germplasm in research to improve American agriculture. In 1985, the PTO, by granting utility patents on sexually reproducing plants, ignored the PVPA and clear Congressional intent and created a legal situation in which our agricultural research is severely impeded, bringing about the very consequences feared by Congress. The Court should not sanction this *ultra vires* agency action and its resulting harm to America's agricultural future and the nation's food security.

B. Utility Patents Will Limit The Exchange Of Information And Germplasm

The PTO's extension of utility patent protection to sexually reproducing plants has led to restrictions in the exchange of scientific information and genetic material, particularly from private companies to public plant breeders. If a plant breeder intends to seek utility patent protection of a new variety under section 101, it is unlikely that the new variety, its characteristics, genetic make-up or breeding technique will be

discussed publicly at least until patent protection has been obtained. It is further unlikely that a plant breeder who is seeking such protection will enter the new variety into government regional trials until after the application is made, nor will sample seeds be sent to many colleagues.

These results are far from hypothetical. Recently, a survey of public plant breeders found "that public sector plant breeding has been negatively impacted by the private sector's development and control of proprietary genetic stocks. Nearly 50% of public plant breeders have had difficulties obtaining genetic stocks from companies; the most shocking result is that almost 1/4 of breeders responded that graduate student training has been harmed."[8]

An example of how the extension of patenting to sexually reproduced plants has reduced the free flow of germplasm among plant breeders is exemplified by the development of Seminis Vegetable Seeds, Inc.'s Sharp Shooter lettuce. In 1999, Seminis was issued U.S. Patent No. 5,973,232 claiming:

> (1) Lactuca sativa (lettuce) seed designated as Sharp Shooter having ATCC Accession No. 209461;
>
> (2) A Lactuca sativa plant produced by growing the seed in claim 1;
>
> (3) A Lactuca sativa plant having all the physiological and morphological characteristics of the Lactuca sativa plant of claim 2; and
>
> (4) A F_1 hybrid Lactuca sativa plant having Sharp Shooter as a parent, wherein Sharp Shooter is grown from seed having ATCC Accession No. 209461. U.S. Patent No. 5,973,232 (issued Oct. 26, 1999).

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[8] Steven C. Price, *Public and private plant breeding*, 17 Nature Biotechnology 938 (1999).

The description of the development of Sharp Shooter and its claims exemplify how the PTO's extension of utility patents directly conflicts with the actions and intent of Congress in passing the PVPA. Seminis developed Sharp Shooter with the use of three different lettuce varieties as parents. These parents consisted of a publicly released cultivar named Montello and two lettuce varieties subject to PVPA protection by the Harris Moran Seed Company, El Toro (PVP No. 8200027, issued Apr. 28, 1983) and Alpha (PVP No. 9000055, issued Dec. 31, 1991). As a result of the PVPA's breeder exemption, Seminis was legally allowed, as intended by Congress, to use publicly released varieties and Harris Moran's varieties to breed and improve upon lettuce varieties to, in this case, breed for increased resistance to downy mildew pathogens and corky root rot pathogens. The irony of such a situation should not be lost on the Court. It was the very existence of the PVPA process that allowed Seminis access to germplasm that led to the development of its improved variety of lettuce. However, once Seminis developed this variety it was allowed to halt the future free flow of this improved germplasm by receiving a utility patent on Sharp Shooter lettuce and derived hybrids. *See Id.* (discussing claim 4). It should be clear that Congress did not create a plant breeders' exemption in the PVPA to allow for companies to create an improved variety through the open flow of germplasm and then sanction that such a free flow of information be cut off once a company decided that a new variety with desirable traits should be patented.

Amici are aware of a number of public plant breeders who have personal experience in having their ability to freely exchange research results dramatically curtailed by the PTO's arbitrary and capricious extension of utility patents to sexually reproducing plants. As many public plant breeders in universities navigate the intellectual property ramifications of public plant breeding research in crops, these breeders are often prevented from releasing information and germplasm to

colleagues around the world. The ramifications from such limitations not only affect the ability to distribute material to other plant breeders, they also limit the access to germplasm by other plant breeders interested in improving plant varieties. The end result is exactly what Congress feared, that utility patent protection over sexually reproducing plants will detrimentally limit public plant breeding.

The harm caused to public plant breeding by the extension of utility patent rights reaches beyond the research community. For years, many farmers have funded public plant research through national and state mandatory assessments of a percentage of the net market price of a crop, known as "check offs".[9] These check off funds have been used to leverage additional state and federal funds to further support public plant breeding research under agreements between land grant universities and the Agricultural Research Service of the USDA. As this public research becomes increasingly impeded by utility patent protection, the farm community fails to receive the plant breeding benefits it has funded.

These impediments and impacts caused by the utility patenting of sexually reproducing plants are not unique to public plant breeders. *Amici* are aware of private plant breeders that have had their ability to develop new and improved plant varieties halted by competitors' patent rights. In particular, one such breeder seeks to use the Gold Rush variety of pumpkin for breeding to develop new traits and new varieties of pumpkins. However, the Gold Rush variety is subject to a utility patent claiming both the variety and first

[9] For example, the Soybean Promotion, Research and Consumer Information Act, 7 U.S.C. §§ 6301-6311, authorizes a national soybean promotion, research and consumer information program funded by a mandatory assessment "check off" of .5% of the net market price of soybeans. The program, administered by the United Soybean Board, *inter alia*, leverages checkoff dollars with government research funding to promote research on soybean varieties.

generation hybrids developed with Gold Rush as a parent line. U.S. Patent No. 5,811,642 (issued Sept. 22, 1998). Rupp Seeds originally developed the Gold Rush pumpkin by selecting the Connecticut Field variety of pumpkin and crossing it with a gourd of unknown variety and then further selecting down the resulting variety. Connecticut Field, considered the traditionally bred American pumpkin, has been grown for decades without PVPA or other intellectual property controls. In patenting the resulting plants and improved traits of Connecticut Field Rupp has foreclosed additional research on improving this new cultivar. Indeed, the patent holder has done this with other pumpkins by obtaining a utility patent on Pumpkin Variety RS 1090 that was developed over the course of 35 years by allowing bees to randomly cross pollinate Connecticut Field pumpkins with other PVPA protected varieties such as the Howden pumpkin (PVP No. 7200106, issued May 31, 1977) and the Pankow's Field pumpkin (PVP No. 8000128, filed May 23, 1980). *See* U.S. Patent No. 5,457,278 (issued Oct. 10, 1995).

Similar to the situation with Seminis' Sharp Shooter lettuce, a seed company has been able to utilize and access germplasm by taking advantage of the PVPA's plant breeder exemption, then patent a new variety and exclude future research on their improvement. Because utility patent rights foreclose the Congressionally sanctioned PVPA breeders' exemption, the Gold Rush variety's germplasm remains inaccessible to other plant breeders unless they pay significant royalties and enter into licensing agreements with the patent holder. These results exemplify why Congress has never extended patent rights to sexually reproducing plants. Such an intellectual property regime creates a severe financial disincentive for both public and private plant breeders seeking access to germplasm and new varieties for which they will use to expand existing research. It also is a serious impediment to the entry of new start-up companies in the plant breeding industry.

C. Utility Patents Have Promoted Significant Consolidation Of The Seed Industry

Intellectual property rights restrict the number of suppliers in a market in an attempt to provide incentives for innovation. Contrary to the assertion of the Respondent, there is no evidence that extension of utility patents to plants has actually stimulated invention. Rather, utility patents create incentive to acquire control of basic materials, limit access to them, and seek further patent protection as a means of continuing control. Since the expansion of utility patent protection to sexually reproducing plants, the number of independent seed companies has declined significantly. This result has occurred as the increased intellectual property rights of utility patents on sexually reproducing plants restricts market entry and results in an increasingly concentrated seed market. The extension of utility patenting to plants has in fact brought a large reduction in the number of small research companies and small family-owned seed businesses. The result has been an increase in market share for the large seed companies and an increasing involvement by large chemical companies looking for ways to distribute their other products such as herbicides.

Consolidation in the seed industry is happening at a phenomenal rate. Large companies are purchasing smaller seed companies at an exponential rate as they attempt to dominate access to germplasm resources. Between 1995 and 1998, approximately 68 seed companies either were acquired by, or entered into joint ventures with, six large, multinational corporations (Monsanto, Aventis, Dow, AstraZeneca, Novartis and DuPont).[10] Some of these acquisitions and mergers have involved companies that had previously

[10] John L. King, *Concentration and Technology in Agricultural Input Industries*, USDA, Economic Research Service, 763 Agriculture Information Bulletin 6, *available at* http://www.ers.usda.gov/publications/aib763/ (Mar. 2001) [hereinafter "King"].

undertaken acquisitions of their own. And, in many cases, smaller firms have been bought outright to acquire their plant variety-based intellectual property. For example, Monsanto has purchased Holden Foundation Seeds for $1 billion, the remaining sixty percent of DeKalb Genetics that it did not already own, Asgrow (soybean and corn), Agracetus (of W.R. Grace & Co.) and Cargill's international seed division. *See* Debra L. Blair, *Intellectual Property Protection and its Impact on the U.S. Seed Industry*, 4 Drake J. Agric. L 297 (1999) [hereinafter "Blair"]. Over just the last five years, Monsanto has acquired, merged with or obtained an interest in DeKalb (1998), Calgene (1997), Asgrow (1996), First Line Seeds Limited (1998), Holden's Foundation Seed (1997), Plant Breeding International (1999), Cargill's International seed business (1998), Agracetus (1996), and Ecogen (1996) among others. *Higginbotham v. Monsanto Co.*, Docket No. 99-CV-03337 (CKK), Am. Class Action Compl. (filed Jan. 31, 2000).

The change of identity in the Respondent in this case reflects the ongoing consolidation in the seed industry fueled, at least in part, by extending utility patent rights. In 1999, DuPont paid $7.7 billion to acquire the rest of the original plaintiff Pioneer Hi-Bred International that it did not already own. DuPont is now the world's largest seed company with revenues in excess of $1.8 Billion.[11]

As yet another example, Novartis, the third largest seed company, was created through the recent merger of Ciba-Geigy and Sandoz. It now owns Northrup King, Rogers Seed Co., Funk Seeds International and others. Most recently, Novartis has entered into a merger with AstraZeneca to form Syngenta. The evidence that these mergers and acquisitions

[11] Rural Advancement Foundation International, *The Seed Giants-Who Owns Whom?* 4, *available at* http://www.rafi.org/web/allpub-display.shtml?pfl=others/list-all.param (Dec. 2000).

have been, at least in part, stimulated by the PTO's extension of utility patents protection is overwhelming. The largest patent holders are the most active in purchasing and collaborating with each other to gain market power and position and control over genetic resources. As of 1999, Monsanto (including its acquisitions of DeKalb, Cargill, Asgrow and Holden) controlled 60% of all utility soybean patents and almost 30% of all utility corn patents. *See* Blair at 322 (citing to Table 2).

The consolidation of the industry has significant impacts on agriculture. Acquisition of smaller plant-breeding companies has given larger corporations quick access to stock cultivars and new plant varieties in development. Ultimately, consolidation of the industry serves, *inter alia*, to further lock up the germplasm resources of small seed companies that have been bought out. For example, the Respondent Pioneer began securing patents for its hybrids in the late 1980's. It has announced it will seek utility patents for all of its corn hybrids.[12] Now combined with the market share of its parent, Respondent can dictate who has access to what germplasm and to what end. As a result of industry-wide mergers and acquisitions in the 1990's, the four largest firms now have significant concentrated power over the U.S. commercial seed industry controlling 67% of the U.S. corn seed market, 49% of the soybean seed market and 87% of the cotton seed market.[13] Such market control allows these dominant firms to raise the seed prices it charges farmers without fear of being undercut by competitors.

Plant breeders and farmers now confront the impediment of patent protection at every turn. Seed patents increasingly create a scenario where the cost of royalties or denial of

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[12] Anne Fitzgerald, *Pioneer to Patent Seed Corn Hybrids*, Des Moines Reg, April 9, 1996, at S8.

[13] King at 7 (citing to Figure 3).

access to germplasm altogether becomes a major, if not overriding, factor in the decisions of plant breeders on whether to select patented plants to create new varieties. Combined with the genetic uniformity required by a utility patent regime and the inability of farmers to save seeds, this serves to further accelerate the rate of genetic erosion.

IV. IMPACTS ON FARMERS AND CONSUMERS CAUSED BY PTO'S ILLEGAL EXTENSION OF UTILITY PATENT PROTECTION.

The PTO's extension of utility patents has also had a tremendous impact on farmers across the country. The policies adopted by PTO have taken away the farmer's traditional and Congressionally recognized right to save seed, resulting in increased seed prices and have created a way in which seed companies can dictate the legal rights of farmers through increasingly coercive seed purchasing agreements. Moreover, these agreements can even mandate the conditions of post-harvest use and sale of the patented crop.

A. Impacts On Seed Saving

At present, farmers generally have three options for acquiring seeds: (1) to obtain quality seed each season from public institutes, seed companies or dealers; (2) to save part of their own harvest as seed; and (3) to trade part of their harvest for seed from grain dealers. In passing the PVPA, Congress specifically provided protection for farmers' right to save seed through the PVPA's seed savers provisions. *See Asgrow Seed Co. v. Winterboer*, 513 U.S. 179 (1995) (upholding a farmer's right to save seed under the PVPA). Should the Court uphold Pioneer's claim that the PTO has validly extended utility patent protection to sexually reproducing plants, farmers will have lost this right specifically guaranteed by an act of Congress.

1. *Patents have taken away a centuries-old traditional right to save seed*

Plant varieties are distinct from other patentable materials because they reproduce. Moreover, as the examples of Sharp Shooter lettuce and Gold Rush pumpkin described *supra* indicate, no potential utility plant patent holder has ever started from scratch. Most plant breeders build upon the accumulated innovation of farmers and plant breeders from centuries ago. Farmers played a major role in expanding the germplasm base of modern agriculture through experimentation and creation of thousands of new plant varieties. These varieties built American agriculture and helped to prevent genetic erosion. Crucial to this history was the ability to save seed and the exchange of this seed among farmers and breeders, which ensured that a diverse genetic pool was available for all to improve. If Pioneer's utility patents are upheld, this critical legacy will be lost.

2. *Seed Saving Controls Prices*

Prices for seed have risen dramatically since 1985 and the extension of utility patents to sexually reproducing plants have undoubtedly contributed to this increase.[14] Prior to the PTO's extension of utility patent protection, companies had access to new cultivars and could produce and market a new variety as long as they could cover their cost of production and marketing. Because a company was often using freely accessible germplasm in developing new cultivars, the cost of

[14] For example, the cost of corn seed has increased from $18.48 dollars per planted acre in 1985 to $30.29 dollars per planted acre in 1999. USDA, Economic Research Service, *Corn costs and returns data, available at* htpp://www.ers.usda.gov/Data/CostsAndReturns/car/Corn3.htm (last updated Mar. 27, 2001). Similarly, the cost of soybean seed has increased from $12.92 dollars per planted acre in 1985 to $19.25 dollars per planted acre in 1999. USDA, Economic Research Service, *Soybean costs and returns data, available at* htpp://www.ers.usda.gov/Data/CostsAndReturns/car/Soybean3.htm.(last updated Mar. 27, 2001).

developing a new variety was much lower. Additionally, the mere act of performing plant research did not render a plant breeder vulnerable to a patent infringement suit. However, utility patents provide companies with greater control over the price and output of their products. Patents and "technology user" agreements restrict access to new cultivars by giving the producer sole right to produce, market or license their sale. Since the company developing a new cultivar has an absolute monopoly on that cultivar, the price will not be driven down by competition from new cultivars derived from the patented variety or by farmers saving seeds. Thus, the company can charge the maximum price governed only by the value the new plant variety represents to the buyer.

Prior to 1985, there were at least two checks on this ability to increase seed prices; (1) seed saving and (2) plant breeder rights. As allowed under the PVPA, seed saving acts as a check on seed prices as efforts by seed companies to raise prices are likely to be met by an increase in saved seed. This was a particularly viable option for farmers in many seed species such as cotton and cereals. Such action often produced a braking effect on prices for fresh seeds. Additionally, the access to germplasm allowed under the PVPA helps reduce the cost of plant breeding and creation of new varieties. These lower research and development costs are reflected in the market by lower seed prices. These key economic considerations were recognized by Congress throughout its deliberation and action preventing the utility patenting of sexually reproducing plants. Therefore, the PTO should not be allowed to fundamentally alter the dynamics of the seed market through an arbitrary and capricious expansion of the subject matter covered under section 101 of the Patent Act.

3. *Utility Patent Protection Has Created Defendant Farmers*

The extension of utility patent protection threatens to fundamentally alter the pursuit of farming. Increasingly, farmers have become the latest casualty in an ever increasing high stakes game of prosecuting patent infringement and other intellectual property violations. In the U.S., the number of intellectual property lawsuits has become immense. In 1999, there were 8,200 cases alone.[15] The burgeoning number of intellectual property cases is increasingly being brought to bear on the U.S. farmer. For example, one company, Monsanto, has filed more than 475 lawsuits against farmers for, *inter alia*, patent infringement and violation of "technology user" agreements for saving seed or selling or trading seed to fellow farmers. *See Higginbotham v. Monsanto Co.*, Docket No. 99-CV-03337 (CKK) Am. Class Action Compl. (filed Jan. 31, 2000).

The patenting of sexually reproducing plants may also be fundamentally changing the face of patent infringement claims. Many patented seed varieties are from open pollinated crops whose pollen can infect neighboring farmers planted with unpatented varieties. An example such cross pollination has occurred with the StarLink™ genetically engineered corn variety patented by the company Aventis. *See* U.S. Patent No. 5,861,543 (issued Jan. 19, 1999). StarLink™, which does not have regulatory approval for human consumption, has contaminated corn fields across the country that were not planted with the variety and caused significant economic harm to many farmers.[16] The ultimate

[15] Rural Advancement Foundation International, *In Search of Higher Ground* 9, *available at* http://www.rafi.org/web/allpub-display.-shtml?pfl=ocp/list-all.param (September 2000).

[16] *See generally*, Brian O'Reilly, *Reaping A Biotech Blunder*, Fortune, Feb. 19, 2001.

result of StarLink™-like cross pollination can be that a farmer who attempts to save his or her seed may be become an involuntary infringer of a patent if the genetic content of his seed has changed as result of this biological pollution. In 1930, Congress recognized such vagaries of cross pollination in sexually reproducing plants. *See* S. Rep. No. 71-315, at 7 (1930). In this regard, Congress was prescient in its intent not to extend utility patent rights to seeds.

If farmers are not being hauled off their fields and into court, they are spending valuable time reviewing the myriad of licensing and "technology user" agreements now necessitated by seed companies selling their patented seed. Another result of expanding the utility patent regime to seeds is the growing use of purchase agreements associated with a farmer purchasing a patented seed variety. These contracts enable companies to force binding arbitration as a sole method of settling disputes. The contracts also enable the patent holder to use breach of contract claims, as well as claims of infringement, in local courts to enforce their ownership rights. Not surprisingly, a significant number of Monsanto's infringement prosecution cases are in the Eastern District of Missouri, home of the company. This is the result of seed agreements which contain a right of venue clause allowing the patent holder to force legal disputes to be settled in courts that may be more favorable to the patent holder or make defense against infringement charges more costly to the farmer. These agreements also require acceptance of limited warranties that significantly narrow the liability of the patent holder or seed seller for any and all losses, injuries or damages resulting from use or handling of the seed. Thus, the PTO's extension of utility patents has been piggybacked with the shifting of virtually all liability for misuse onto the farmer-purchaser. Labels on seed bags inform purchasers that they are entering into legal agreements with seed companies, which typically provide that the purchaser abide by specific use restrictions on the seed. In the case at hand, Pioneer's

labels prohibit crop saving and state "use . . . for . . . development of a hybrid or different variety of seed is strictly prohibited." Defs.' Pet. Reh'g En Banc at 12.

Congress never envisioned turning the American farmer into a "poster child" for patent infringement. Instead, it acted to strike a balance with the PVPA by allowing limited intellectual property rights to seed producers in exchange for exemptions that allow farmers and plant breeders to remain more than corporate "serfs" renting the limited available germplasm from a handful of companies.

CONCLUSION

For the reasons set forth above and those presented in the Petitioner's Brief, the *Amici* urge this Court to reverse the decision of the Federal Circuit in this case.

Respectfully Submitted,

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